

Invited lecture

Title: Nucleation Engineering: A Powerful
Strategy for Controlled Nanoparticle Synthesis

Speaker: Dr. Yugang Sun
Argonne National Laboratory

Date & Time: 2:30-4:00(pm) Apr. 18, 2012 (Wednesday)

Venue: Meeting room 221, IPE Mansion



Abstract:

Synthesis of colloidal nanoparticles with tailored properties provides the foundation for exploring their applications in many promising areas, such as energy harvesting/conversion/storage, catalysis, electronics, etc. In this presentation, I will highlight a number of guidelines that allow us to engineer the critical nucleation steps involved in the growth of nanoparticles by taking the synthesis of silver nanoparticles with controlled sizes and morphologies as an example. Meanwhile, a couple of synchrotron x-ray techniques including time-resolved high-energy x-ray diffraction and in-situ transmission x-ray microscopy will be discussed to show their promise in probing the growth of nanoparticles and chemical transformation of nanoparticles in real time. At the end of presentation, exceptional size-dependence of optical properties of the as-synthesized silver nanoparticles will be emphasized to shed a light on how to use the well-synthesized nanoparticles as a platform to discover the unique properties associated with the nanometer dimensions.

Introduction:

Yugang Sun received his B.S. (1996) and Ph.D. (2001) from University of Science and Technology of China. Currently he is a scientist in the Center for Nanoscale Materials of Argonne National Laboratory. His research interests focus on developing novel approaches for the synthesis of a wide range of nanostructures including metal nanoparticles with well-controlled morphologies, single-crystal semiconductor nanostructures with mechanical flexibility, and metal/semiconductor nanocomposites with multiple functionalities.

This is invited by Prof. Dan Wang, Welcome !

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